

CLAIMS

We claim:

1. A jaw assembly for use in a vise, comprising:
a block having a plurality of apertures, the block further having a plurality of channels passing through a portion of the block, each of the channels having an first segment in fluid connection with an inlet hole and having a second segment in fluid communication with at least one of the apertures; and,
a plurality of pins, wherein each pin is located within an aperture and wherein each pin is independently deployable to a use position and retractable to a non-use position.
2. The jaw assembly of claim 1 wherein the channels extend in a generally longitudinal direction of the block.
3. The jaw assembly of claim 1 having at least one fluid passageway, the passageway extending from the inlet hole to at least one aperture.
4. The jaw assembly of claim 1 wherein the channels are in a rear surface of the plate.
5. The jaw assembly of claim 4 including a plate secured to the rear surface of the block, the plate adapted to enclose the channels.
6. The jaw assembly of claim 5 including a means for securing the plate to the block.
7. The jaw assembly of claim 6 including a means for fixedly attaching the block and plate to the vise.
8. The jaw assembly of claim 3 wherein the apertures have a first and second aperture portion, the first aperture portion having a diameter less than a diameter of the second aperture portion such that a ledge is formed between the first and second aperture

portions, each pin having a stop, the engagement of the ledge and the stop preventing further deployment of the pin.

9. The jaw assembly of claim 3 wherein the apertures have a first and second hole portion, the first hole portion having a diameter less than a diameter of the second hole portion forming a ledge between the first and second hole portions, each pin having a first and second pin portion, the first pin portion having a diameter less than a diameter of the second pin portion, the engagement of the ledge and the second pin portion preventing movement of the second pin portion into the first hole portion.
10. A jaw assembly for use in supporting and securing an object in a vise, comprising:
 - a block having a plurality of apertures, the block further having a plurality of channels in a rear surface of the block, each of the channels having an first segment in fluid connection with an inlet hole and having a second segment in fluid communication with at least one of the apertures;
 - a plate secured to the rear surface of the block, the plate adapted to enclose the channels; and,
 - a plurality of pins, wherein each pin is located within an aperture and is in slidable engagement with the particular aperture.
11. The jaw assembly of claim 10 having at least one fluid passageway, the passageway extending from the inlet hole to at least one aperture.
12. The jaw assembly of claim 10 wherein each pin is independently deployable to a use position and retractable to a non-use position.
13. The jaw assembly of claim 12 wherein the pins, when deployed to the use position, form a support structure that supports the object at an angle relative to a horizontal axis of the block.

14. The jaw assembly of claim 13 wherein the angle ranges between 0 to 90 degrees.
15. The jaw assembly of claim 13 wherein the angle is 15 degrees.
16. The jaw assembly of claim 13 wherein the angle is 30 degrees.
17. The jaw assembly of claim 13 wherein the angle is 45 degrees.
18. The jaw assembly of claim 12 including a means for securing the plate to the block.
19. The jaw assembly of claim 18 including a means for fixedly attaching the plate and the block to the vise.
20. The jaw assembly of claim 12 wherein the apertures have a first and second aperture portion, the first aperture portion having a diameter less than a diameter of the second aperture portion such that a ledge is formed between the first and second aperture portions, each pin having a stop, the engagement of the ledge and the stop preventing further deployment of the pin.
21. The jaw assembly of claim 12 wherein the apertures have a first and second hole portion, the first hole portion having a diameter less than a diameter of the second hole portion forming a ledge between the first and second hole portions, each pin having a first and second pin portion, the first pin portion having a diameter less than a diameter of the second pin portion, the engagement of the ledge and the second pin portion preventing movement of the second pin portion into the first hole portion.
22. A jaw assembly for use in supporting and securing an object in a vise, comprising:
a block having a plurality of apertures, wherein each aperture is spaced

a distance from a lower edge of the block, the block further having a plurality of generally longitudinal channels passing through a portion of the block, each of the channels having an first segment in fluid connection with an inlet hole and having a second segment in fluid communication with at least one of the apertures;

a plurality of pins, wherein each pin is located within an aperture and each pin is independently deployable to a use position and retractable to a non-use position.

23. The jaw assembly of claim 22 having at least one fluid passageway, the passageway extending from the inlet hole to at least one aperture.
24. The jaw assembly of claim 22 wherein the channels are in a rear surface of the block.
25. The jaw assembly of claim 24 including a plate secured to the rear surface of the block, the plate adapted to enclose the channels.
26. The jaw assembly of claim 25 including a means for securing the plate to the block.
27. The jaw assembly of claim 26 including a means for fixedly attaching the block and plate to the vise.
28. The jaw assembly of claim 23 wherein the apertures have a first and second aperture portion, the first aperture portion having a diameter less than a diameter of the second aperture portion such that a ledge is formed between the first and second aperture portions, each pin having a stop, the engagement of the ledge and the stop preventing further deployment of the pin.
29. The jaw assembly of claim 23 wherein the apertures have a first and second hole portion, the first hole portion having a diameter less than a diameter of the second

hole portion forming a ledge between the first and second hole portions, each pin having a first and second pin portion, the first pin portion having a diameter less than a diameter of the second pin portion, the engagement of the ledge and the second pin portion preventing movement of the second pin portion into the first hole portion.

30. The jaw assembly of claim 23 wherein the pins, when deployed to the use position, form a support structure that supports the object in an elevated position above a deck surface of the vise.
31. The jaw assembly of claim 23 wherein the pins, when deployed to the use position, form a support structure that supports the object in an elevated position above the lower edge of the block.
32. A jaw assembly for use in supporting and securing an object in a vise, comprising:
 - a block having a plurality of apertures, wherein each aperture is spaced a distance from a lower edge of the block, the block further having a plurality of generally longitudinal channels passing through a rear surface of the block, each of the channels having an first segment in fluid connection with an inlet hole and having a second segment in fluid communication with at least one of the apertures;
 - a plate secured to the rear surface of the block, the plate adapted to enclose the channels; and,
 - a plurality of pins, wherein each pin is located within an aperture and each pin is independently deployable to a use position and retractable to a non-use position.
33. The jaw assembly of claim 32 having at least one fluid passageway, the passageway extending from the inlet hole to at least one aperture.
34. The jaw assembly of claim 33 including a means for securing the plate to the block.

35. The jaw assembly of claim 34 including a means for fixedly attaching the block and plate to the vise.
36. The jaw assembly of claim 33 wherein the apertures have a first and second aperture portion, the first aperture portion having a diameter less than a diameter of the second aperture portion such that a ledge is formed between the first and second aperture portions, each pin having a stop, the engagement of the ledge and the stop preventing further deployment of the pin.
37. The jaw assembly of claim 33 wherein the apertures have a first and second hole portion, the first hole portion having a diameter less than a diameter of the second hole portion forming a ledge between the first and second hole portions, each pin having a first and second pin portion, the first pin portion having a diameter less than a diameter of the second pin portion, the engagement of the ledge and the second pin portion preventing movement of the second pin portion into the first hole portion.
38. The jaw assembly of claim 33 wherein the pins, when deployed to the use position, form a support structure that supports the object in an elevated position above a deck surface of the vise and at an angle relative to a horizontal axis of the block.
39. The jaw assembly of claim 38 wherein the angle ranges between 0 and 90 degrees.
40. The jaw assembly of claim 33 wherein the pins, when deployed to the use position, form a support structure that supports the object in an elevated position above the lower edge of the block and at an angle relative to a horizontal axis of the block..
41. The jaw assembly of claim 40 wherein the angle ranges between 0 and 90 degrees.

42. A jaw assembly for use in a vise, the jaw assembly permitting an object to be worked upon to be secured and supported at an elevated position, the assembly comprising:
- a block having a first set, a second set, and a third set of apertures spaced a distance from the deck surface, the block further having a first, a second, and a third longitudinal channel passing through a portion of the block, each of the channels having a first segment in fluid connection with an inlet hole and a second segment in fluid communication with at least one of the apertures; and,
 - a plurality of pins, wherein each pin is located within an aperture and wherein each pin is independently deployable to a use position and retractable to a non-use position.
43. The adjustable jaw of claim 42 wherein the first set of apertures intersect the first channel to define a first fluid passageway, the second set of apertures intersect the second channel to define a second fluid passageway, and the third set of apertures intersect the third channel to define a third fluid passageway.
44. The jaw assembly of claim 42 wherein the pins, when deployed to the use position, form a support structure that supports the object in elevated position.
45. The jaw assembly of claim 43 wherein the channels are in a rear surface of the block.
46. The jaw assembly of claim 45 including a plate secured to the rear surface of the block, the plate adapted to enclose the channels.
47. The jaw assembly of claim 42 including a means for securing the plate to the block.
48. The jaw assembly of claim 43 including a means for fixedly attaching the block and plate to the vise.

49. The jaw assembly of claim 44 wherein each aperture of the first set, second set, and third set of apertures has a first and second aperture portion, the first aperture portion having a diameter less than a diameter of the second aperture portion such that a ledge is formed between the first and second aperture portions, each pin having a stop, the engagement of the ledge and the stop preventing further deployment of the pin.
50. The jaw assembly of claim 44 wherein each aperture of the first set, second set, and third set of apertures has a first and second hole portion, the first hole portion having a diameter less than a diameter of the second hole portion forming a ledge between the first and second hole portions, each pin having a first and second pin portion, the first pin portion having a diameter less than a diameter of the second pin portion, the engagement of the ledge and the second pin portion preventing movement of the second pin portion into the first hole portion. .
51. A method of supporting and securing an object in a vise comprising the steps of:
- providing a first block having a plurality of apertures, the block further having a plurality of channels passing through a portion of the block, wherein each of the channels has a first segment in fluid connection with an inlet hole and a second segment in fluid communication with at least one aperture, the first block further having a plurality of pins, wherein each pin is located within an aperture and wherein each pin is independently deployable to a use position and retractable to a non-use position, the first block secured to a fixed member of the vise;
 - providing a second block, the second block secured to a moveable member of the vise;
 - supplying a fluid force to at least one inlet hole to deploy a plurality of pins to each use position;
 - retracting a selective amount of pins to the non-use position;
 - placing the object on the deployed pins of the first block, the pins

supporting the object; and,

displacing the second block towards the first block until the second block engages and secures the object.

52. A method of supporting and securing an object in a vise jaw comprising the steps of:

providing a first block having a plurality of apertures, the block further having a plurality of channels in a rear surface of the block, wherein each of the channels has a first segment in fluid connection with an inlet hole and a second segment in fluid communication with at least one aperture, the first block further having a plurality of pins, wherein each pin is located within an aperture and wherein each pin is independently deployable to a use position and retractable to a non-use position, the first block further having a plate secured to the rear surface to enclose the channels, the first block secured to a fixed member of the vise;

providing a second block, the second block secured to a moveable member of the vise;

applying a fluid force to at least one inlet hole to deploy a plurality of pins to each use position;

manually retracting a selective amount of pins to the non-use position, the remaining deployed pins forming a support structure to support an object to be worked upon and a restricting structure to restrict lateral movement of the object;

placing the object on the support structure;

manually deploying a pin located adjacent to the object to restrict lateral movement of the object; and,

displacing the second block towards the first block while the object is supported by the support structure until the second block engages and secures the object.

53. A method of supporting and securing an object in a vise jaw, the object secured and supported at an elevated position, the method comprising the steps of:

providing a first block having a first set, a second set, and a third set of apertures, the first block further having a first, a second, and a third longitudinal channel in a rear surface of the first block, wherein the channels have a first segment and a second segment, the first block further having a first, second, and third inlet hole, wherein each of the first segments are in fluid connection with the respective inlet holes and wherein each of the second segments are in fluid connection with the respective sets of apertures, the first block further having a plurality of pins, wherein each pin is located with an aperture and wherein each pin is independently deployable to a use position and retractable to a non-use position, the first block further having a plate secured to the rear surface of the first block to enclose the channels;

securing a plate to the rear surface of the first block to enclose the channels;

providing a second block generally opposed to the first block along a deck surface of the vise;

applying a fluid force to the first inlet hole to deploy the first set of pins to the use position;

applying a fluid force to the second inlet hole to deploy the second set of pins to the use position;

retracting a selective amount of deployed pins to the non-use position, the remaining deployed pins forming a support structure;

placing the object on the pins deployed in the use position, the deployed pins supporting the object in an elevated position above the deck surface; and,

displacing the second block towards the first block while the object is supported by the second set of pins until the second block engages and secures the object.

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